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Docket Administrator (Room 3J-219)
Lucent Technologies Inc.
101 Crawfords Corner Road
Holmdel, NJ 07733-3030

EXAMINER

HAILE, FEBEN

| ART UNIT | PAPER NUMBER |
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2616

DATE MAILED: 08/18/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/002,570

Applicant(s)

CAO ET AL.

Examiner

Feben M. Haile

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) 2, 16 and 26 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 1, 3-15 and 17-25 is/are allowed.
- 6) ☒ Claim(s) 27-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: _____.

DETAILED ACTION

Response to Amendment

1. In view of applicant's amendment filed May 18, 2006, the status of the application is still pending with respect to claims 1-31.

2. The amendment filed is sufficient to overcome the rejection of claims 1, 3-5, 8-9, 11-15, 17, 20, and 22-26 based upon the allowable subject matter of "two schedulers each operating on different protocol layers, wherein a scheduler (PDU-scheduler) operating on an upper layer schedules each protocol data unit (PDU) of an incoming data flow to be transmitted into a priority list to be served by a scheduler (MAC-scheduler) of a lower layer, and the scheduler (MAC-scheduler) of the lower layer performs medium access control thereby optimizing the system efficiency of data transmission by dynamically operating on the protocol data units (PDU) within the priority list" being incorporated into independent claims 1 and 15.

3. Newly added claims 27-31 filed in the amendment have been considered but are ineffective to overcome Ehrstedt et al. (US 6,901,065), Sarkkinen et al. (US 6,950,420), and Feder et al. (US 2005/0239491).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 27 and 28 rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrstedt et al. (US 6,901,065), hereinafter referred to as Ehrstedt, in view of Sarkkinen et al. (US 6,950,420), hereinafter referred to as Sarkkinen, in view of Feder et al. (US 2005/0239491), hereinafter referred to as Feder.

Regarding claim 27, Ehrstedt discloses receiving quality of service requirements of each data flow comprising protocol data units (PDU) (column 2 lines 34-40; different Quality of Services are assigned to packets, i.e. MAC-PDUs, corresponding to a particular Radio Access Bearer), determining a priority order of the protocol data units (PDU) to be served for data transmission on a communication channel (column 2 lines 27-29; scheduling of MAC-PDUs for transmission over a air interface), with regard to the defined priority order and in dependent upon allocated radio resource constraints (column 2 lines 40-42; priorities are determined on the basis of Radio Access Bearer parameters).

Ehrstedt fails to teach serving the protocol data units (PDU) by dynamically creating transport block sets (TBS) to be transmitted to the physical layer (PHY-layer).

Sarkkinen discloses a medium access control that sends a PDU to a physical layer in the form of a transport block set (column 6 lines 62-65).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the method of the medium access control taught by

Sarkkinen into Ehrstedt's MAC entity. The motivation for such a modification being an added flexibility in using a transparent Radio Link Control mode.

Ehrstedt, Sarkkinen, or their combination fail to teach an initial adjustment step using predefined bit-error-rate requirements and interference to pathloss rate estimation, wherein the adjustment of the transmission power comprises a subsequent momentary adjustment step using the respective previous transmission power and data rate (R_b).

Feder discloses a power control system setting thresholds, such as signal strength, system interference, and BER, when adjusting the transmit power of a wireless transmitter (**page 5 column 0032**). The power control technique also takes into account signal strength from received information when adjusting the power (**page 1 paragraph 0008**). It is obvious to one of ordinary skill in the art that the signal strength could be related to the power and rate used to transmit the information.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the power control system taught by Feder into the MAC entity taught by Ehrstedt as modified by Sarkkinen. The motivation for such a modification being an improved method for controlling power.

Regarding claim 28, Ehrstedt discloses receiving quality of service requirements of each data flow comprising protocol data units (PDU) (**column 2 lines 34-40; different Quality of Services are assigned to packets, i.e. MAC-PDUs, corresponding to a particular Radio Access Bearer**), determining a priority order of the protocol data units (PDU) to be served for data transmission on a communication

channel (**column 2 lines 27-29; scheduling of MAC-PDUs for transmission over a air interface**), with regard to the defined priority order and in dependent upon allocated radio resource constraints (**column 2 lines 40-42; priorities are determined on the basis of Radio Access Bearer parameters**).

Ehrstedt fails to teach serving the protocol data units (PDU) by dynamically creating transport block sets (TBS) to be transmitted to the physical layer (PHY-layer).

Sarkkinen discloses a medium access control that sends a PDU to a physical layer in the form of a transport block set (**column 6 lines 62-65**).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the method of the medium access control taught by Sarkkinen into Ehrstedt's MAC entity. The motivation for such a modification being an added flexibility in using a transparent Radio Link Control mode.

Ehrstedt, Sarkkinen, or their combinations fail to teach wherein an overall transmission power (P_{limit}) of all active data flows is dynamically adjusted for a cell within a limit predefined by an allocated transmission power (P_{ps}).

Feder discloses a power control technique provided for each wireless unit within a coverage area (**page 1 paragraph 0009**) where thresholds are set for when adjusting the power of the wireless units (**page 5 column 0032**).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the power control system taught by Feder into the MAC entity taught by Ehrstedt as modified by Sarkkinen. The motivation for such a modification being an improved method for controlling power.

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5. Claim 29 rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrstedt et al. (US 6,901,065), hereinafter referred to as Ehrstedt, in view of Sarkkinen et al. (US 6,950,420), hereinafter referred to as Sarkkinen.

Regarding claim 29, Ehrstedt discloses receiving quality of service requirements of each data flow comprising protocol data units (PDU) (column 2 lines 34-40; **different Quality of Services are assigned to packets, i.e. MAC-PDUs, corresponding to a particular Radio Access Bearer**), determining a priority order of the protocol data units (PDU) to be served for data transmission on a communication channel (column 2 lines 27-29; **scheduling of MAC-PDUs for transmission over a air interface**), with regard to the defined priority order and in dependent upon allocated radio resource constraints (column 2 lines 40-42; **priorities are determined on the basis of Radio Access Bearer parameters**).

Ehrstedt fails to teach serving the protocol data units (PDU) by dynamically creating transport block sets (TBS) to be transmitted to the physical layer (PHY-layer), teach adjusting a transport format set depending on whether a real time service or a non real time service is request.

Sarkkinen discloses a medium access control that sends a PDU to a physical layer in the form of a transport block set (column 6 lines 62-65). It is obvious to one having ordinary skill in the art that real time services correspond to traffic such as voice and non-real time services correspond to traffic such as file transfers. Hence the different services could require different communication parameters, thus affecting the transport block sets.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to incorporate the method of the medium access control taught by Sarkkinen into Ehrstedt's MAC entity. The motivation for such a modification being an added flexibility in using a transparent Radio Link Control mode.

6. Claims 30 and 31 rejected under 35 U.S.C. 103(a) as being unpatentable over Ehrstedt et al. (US 6,901,065), hereinafter referred to as Ehrstedt, in view of Feder et al. (US 2005/0239491), hereinafter referred to as Feder.

Regarding claim 30, Ehrstedt discloses a transceiver unit having transmission data rate and transmission power (column 2 lines 34-40; **different Quality of Services are assigned to packets, i.e. MAC-PDUs, corresponding to a particular Radio Access Bearer**), priority order of the protocol data units (PDU) of multiple data flows with regard to a predefined flow's quality of service requirement and for dynamically scheduling the ordered protocol data units (PDU) dependent upon allocated radio resource constraints (column 2 lines 27-29; **scheduling of MAC-PDUs for transmission over a air interface and column 2 lines 40-42; priorities are determined on the basis of Radio Access Bearer parameters**).

Ehrstedt fails to teach means for adjusting the transmission power subsequent to the establishment of a communication channel by using the respective previous transmission power and data rate (R_b).

Feder discloses a power control technique where each wireless unit performs a signal strength measurement based on the power level of a pilot signal from the base

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station and adjusts the power using that information (**pages 1-2 paragraph 0011**). It is obvious to one of ordinary skill in the art that the signal strength could also be related to the rate used to transmit the pilot signal.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the power control system taught by Feder into the MAC entity taught by Ehrstedt as modified by Sarkkinen. The motivation for such a modification being an improved method for controlling power.

Regarding claim 31, Ehrstedt discloses a transceiver unit having transmission data rate and transmission power (**column 2 lines 34-40; different Quality of Services are assigned to packets, i.e. MAC-PDUs, corresponding to a particular Radio Access Bearer**), priority order of the protocol data units (PDU) of multiple data flows with regard to a predefined flow's quality of service requirement and for dynamically scheduling the ordered protocol data units (PDU) dependent upon allocated radio resource constraints (**column 2 lines 27-29; scheduling of MAC-PDUs for transmission over a air interface and column 2 lines 40-42; priorities are determined on the basis of Radio Access Bearer parameters**).

Ehrstedt fails to teach scheduling means for monitoring throughput without retransmissions and for comparing said throughput with a virtual bandwidth depending on an allocated transmission power (Pps) for adjusting an overall transmission power (Plimit) within a limit predefined by said allocated transmission power (Pps).

Feder discloses a power control technique where each wireless unit performs a signal strength measurement based on the power level of a pilot signal from a base

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station (**pages 1-2 paragraph 0011**). The power control system sets thresholds when adjusting the transmit power of the wireless transmitters (**page 5 column 0032**). It is obvious to one of ordinary skill in the art that the signal strength could be related to bandwidth.

Allowable Subject Matter

7. Claims 1, 3-15 and 17-25 allowed.

Conclusion

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.


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9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Feben M. Haile whose telephone number is (571) 272-3072. The examiner can normally be reached on 6:00am - 3:30pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ricky Ngo can be reached on (571) 272-3139. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JH 0810712006


RICKY Q. NGO
SUPERVISORY PATENT EXAMINER